What is claimed is:

1. A method for measuring optical transmission member position in an array, the method comprising:

directing a laser light from a single laser source to two or more optical transmission members in an array;

creating an optical interference pattern between the laser light emanating from the two or more optical transmission members; and

characterizing the optical interference pattern to provide information about a position of the two or more optical transmission members in the array.

2. The method of claim 1, wherein the characterizing includes:

comparing a separation distance between interference fringes in the optical interference pattern to one or more predetermined values.

3. The method of claim 1, wherein the characterizing includes:

calculating a separation distance d_x between the two or more optical transmission members by applying the equation:

$$\Delta = Z\lambda/d_x$$

where Δ is a separation distance between interference fringes in the optical interference pattern, and λ is the wavelength of the laser light used.

4. The method of claim 1, wherein the characterizing includes:

resolving interference fringes in the optical interference pattern into horizontal and vertical components.

5. The method of claim 1, wherein the characterizing includes:

comparing an orientation of interference fringes in the optical interference pattern with a known axis.

6. The method of claim 1, further comprising:

capturing the optical interference pattern with a digital video camera; and

generating a digital representation of the captured optical interference pattern.

7. The method of claim 1, further comprising:

actively aligning at least one of the two or more optical transmission members in response to the information about the position of the two or more optical transmission members.

8. The method of claim 1, wherein the array is a one-dimensional array.

9. The method of claim 1, wherein the array is a two-dimensional array.

10. The method of claim 9, wherein the two-dimensional array comprises:

an optical fiber array; and

an optical waveguide array proximate said optical fiber array.

11. The method of claim 1, wherein the two or more optical transmission members include at least one optical fiber.

12. The method of claim 1, wherein the two or more optical transmission members include at least one waveguide.

13. A method for measuring optical transmission member position in an array, the method comprising:

illuminating a first optical transmission member in the array and a second optical transmission member in the array with a laser;

creating an optical interference pattern between laser light emanating from the first optical transmission member and the second optical transmission member; and

characterizing the optical interference pattern to provide a position of the second optical transmission member relative to the first optical transmission member.

14. The method of claim 13, wherein the characterizing the optical interference pattern includes:

comparing a separation distance between interference fringes in the optical interference pattern to one or more predetermined values.

15. The method of claim 14, further comprising:

adjusting one or more of the first optical transmission member and the second optical transmission member in response to the comparing the separation distance between interference fringes.

16. The method of claim 14, further comprising:

comparing an orientation of the interference fringes in the optical interference pattern with a known axis.

17. The method of claim 16, further comprising:

adjusting one or more of the first optical transmission member and the second optical transmission member in response to the comparing the orientation of the interference fringes.

18. The method of claim 13, wherein the array is a two-dimensional array.

19. The method of claim 18, wherein the two-dimensional array comprises:

an optical fiber array; and

an optical waveguide array proximate said optical fiber array.

20. The method of claim 18, wherein the first optical transmission member and the second optical transmission member are in different rows in the array.

21. The method of claim 13, wherein the array is a one-dimensional array.

22. The method of claim 13, wherein at least one of the first and second optical transmission members is an optical fiber.

23. The method of claim 13, wherein at least one of the first and second optical transmission members is a waveguide.

24. A system for measuring optical transmission member position in an array, the system comprising:

a laser source configured to provide laser light to two or more optical transmission members in the array;

a target plane arranged to receive the laser light emanating from the two or more optical transmission members; and

wherein the laser light emanating from the two or more optical transmission members forms an interference pattern on the target plane, the interference pattern including a characteristic indicating a position of the two or more optical transmission members.

25. The system of claim 24, further including:

an image receiver configured to convert light received at the target plane into digital signals indicating the optical interference pattern; and

a computer operably coupled to the image receiver, the computer determining the position of the two or more optical transmission members.

26. The system of claim 25, wherein at least one of the optical transmission members is actively aligned in response to the position of the two or more optical transmission members determined by the computer.

27. The system of claim 24, wherein the array is a two-dimensional array.

28. The system of claim 27, wherein the two-dimensional array comprises:

an optical fiber array; and

an optical waveguide array proximate said optical fiber array.

29. The system of claim 24, wherein the first optical transmission member and the second optical transmission member are in different rows in the array.

30. The system of claim 24, wherein the array is a one-dimensional array.

31. The system of claim 24, wherein the two or more optical transmission members include at least one optical fiber.

32. The system of claim 24, wherein the two or more optical transmission members include at least one waveguide.